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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,680	08/25/2003	Sandeep Tonapi	136343 (1306-24)	2877

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GE Global Research
Docket Room K-1/4A59
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EXAMINER	
PENG, KUO LIANG	

ART UNIT	PAPER NUMBER
1712	

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,680	TONAPI ET AL.	
	Examiner	Art Unit	
	Kuo-Liang Peng	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/15/04 response*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) *19-47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☒ Claim(s) *3,4 and 11-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *see Other*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *12/5/03, 8/25/03*.

DETAILED ACTION

1. Applicant's election of the invention of Group I (Claims 1-18) in the response to restriction requirement filed on October 15, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The requirement is still deemed proper and is therefore made FINAL.

Groups II and III, Claims 19-47, are withdrawn for further consideration.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969). A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b). Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-5, 8-16, 21-24 and 27 of copending Application No. 10/924,374. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons: Claims 1-5, 8-16, 21-24 and 27 of copending Application No. 10/924,374 are directed to thermal interface compositions comprising a filler of a specific particle diameter, which are obviously reads on Claims 1-18 of the present invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

4. Claims 3-4 and 11-18 are objected to because of the following informalities:

In Claim 3 (line 4), there are two "polyimide resins".

In Claims 4 (line 4) and 11 (line 4), should "suitable" be removed?

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 3 (lines 7-8), it is not clear as to what polymers the phrase "any other polymeric systems known to those skill in the art" refers to.

In Claim 5 (lines 4-5), it is not clear as to what "other metal nitrides", "other metal oxides" and "other metals" refer to.

Claim 8 recites the limitation "catalyst" in "catalyst inhibitor". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Dent (US 5 977 226).

Dent discloses an addition curable silicone composition comprising components A) to F). The composition can further comprise a filler such as alumina, boron nitride, etc. having a particle diameter of from 2 to 25 microns. (col. 2, lines 4-35, col. 3, line 11 to col. 8, line 44 and Examples). Note that the preamble "thermal interface composition" is merely an intended use, and does not carry any weight of patentability. See MPEP 2111.02. For Claims 10 and 18, the thermal properties are primarily determined by the particle diameter of the filler. Furthermore, since Dent's filler has a particle diameter falling within the range claimed in the present invention, Examiner has a reasonable basis to believe that Dent's composition and Applicants' composition should possess similar thermal properties such as thermal resistance. For Claims 16-17, the molar ratio of Si-H to alkenyl is described in col. 5, lines 13-17.

9. Claims 1-3, 5 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Campbell (Fifteenth IEEE SEMI-THERM™ Symposium, pages 83-97 (1999)).

Campbell discloses a thermal interface material comprising a silver-filled adhesive as described in page 88, right column to page 89, left column and Table 1. The silver can have diameter of approximately 5 to 15 microns. For Claim 10, the thermal properties are primarily determined by the particle diameter of the filler. Furthermore, since Campbell's filler has a particle diameter falling within the range claimed in the present invention, Examiner has a reasonable basis to believe that Campbell's composition and Applicants' composition should possess similar thermal properties such as thermal resistance.

10. Claims 1-3, 5-8 and 10 are rejected under 35 U.S.C. 102(a),(e) as being anticipated by Kropp (US 6 500 891).

Kropp discloses an adhesive comprising a curable resin such as epoxy resin, etc., a filler such as alumina, etc., a curing agent and a curing inhibitor. The particle size of the alumina can be 10 micron. (col. 2, lines 26-50, col. 3, line 61 to col. 4, line 52, col. 5, line 38 to col. 6, line 17 and Table I) An adhesion promoter

can be added. (col. 4, lines 1-6). Note that the preamble "thermal interface composition" is merely an intended use, and does not carry any weight of patentability. See MPEP 2111.02. For Claim 10, the thermal properties are primarily determined by the particle diameter of the filler. Furthermore, since Kropp's filler has a particle diameter falling within the range claimed in the present invention, Examiner has a reasonable basis to believe that Kropp's composition and Applicants' composition should possess similar thermal properties such as thermal resistance.

11. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamakawa (US 6 025 435).

Yamakawa discloses a thermally conductive silicone rubber composition comprising components A) to E). (col. 2, lines 7-30 and Examples) A cure inhibitor such as alkyne alcohols, etc. can be added. (col. 8, lines 8-40) Note that components C) and D) (col. 7, lines 5-42) read on the adhesion promoter in the present invention. Therefore, they can function as adhesion promoters, too. *In re Best*, 195 USPQ 430 (CCPA 1977). For Claims 10 and 18, the thermal properties are primarily determined by the particle diameter of the filler. Furthermore, since Yamakawa's filler has a particle diameter falling within the range claimed in the

present invention, Examiner has a reasonable basis to believe that Yamakawa's composition and Applicants' composition should possess similar thermal properties such as thermal resistance.

12. Claims 1-6, 8, 10-12, 14, 16-18 are rejected under 35 U.S.C. 102(a),(e) as being anticipated by Matayabas (US 6 597 575).

Matayabas discloses a thermal interface material comprising a crosslinkable silicone polymer, polyurethanes, etc. and a filler. The crosslinkable silicone polymer can be derived from a vinyl-terminated silicone oil, a Si-H containing silane and a Si-H containing polysiloxane. The filler can be aluminum, alumina, etc. The filler can have an average particle diameter of less than about 25 microns. (col. 2, lines 5-22, col. 3, line 35 to col. 5, line 17 and col. 6, lines 17-44) The crosslinkable silicone polymer can be cured in the presence of a catalyst, a catalyst inhibitor, etc. (col. 6, lines 45-60). For Claims 10 and 18, as mentioned previously, the thermal properties are primarily determined by the particle diameter of the filler. Furthermore, since Matayabas' filler can have a particle diameter falling within the range claimed in the present invention, Examiner has a reasonable basis to believe that Matayabas' composition and Applicants' composition should

possess similar thermal properties such as thermal resistance. For Claims 16-17, the molar ratio of Si-H to alkenyl is described in col. 5, line 60 to col. 6, line 6.

13. Claims 1-3, 5 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Dietz (US 5 391 604).

Dietz discloses an adhesive paste for die attach applications comprising components A) to C). Component B) can be alumina, boron nitride, etc., which reads on the thermally conductive fillers of the present invention. The particle diameter of the filler can be up to about 25 microns. (col. 2, lines 7-29, col. 2, line 64 to co. 3, line 57, col. 4, lines 21-48 and Examples) As such, Dietz's paste can function as a thermal interface composition. Component A) can comprise a curable polymer such as epoxy resin. (col. 3, lines 53-57) Dietz further teaches that the inorganic filler imparts the desired thermal properties to bonding line. (col. 4, lines 21-48)

14. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Dietz as evidenced by Matayabas.

Dietz discloses an adhesive paste for die attach applications, supra, which is incoporated herein by reference. Matayabas teaches that the thermal properties are

primarily determined by the particle diameter of the filler. (col. 6, lines 34-44). Furthermore, since Dietz's filler can have a particle diameter falling within the range claimed in the present invention, Examiner has a reasonable basis to believe that Dietz' composition and Applicants' composition should possess similar thermal properties such as thermal resistance.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 7, 9, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matayabas in view of Dent (US 5 977 226).

Matayabas discloses a thermal interface material, supra, which is incorporated herein by reference. Matayabas is silent on the use of the specific adhesion promoters and catalyst inhibitors recited in the instant claims. However, these adhesion promoters and catalyst inhibitors are well known in the art. For

example, Dent teaches the use of the adhesion promoters such as alkoxysilane, etc. and the catalyst inhibitors such as ene-ynes, maleate, etc. in an addition cured polysiloxane system. (col. 5, line 54 to col. 8, line 23) The motivations of using these adhesion promoters and catalyst inhibitors are to enhance the adhesion between the composition and a substrate and control the curing of the composition. (col. 5, lines 44-53 and col. 7, lines 55-67) Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate Dent's adhesion promoters and catalyst inhibitors into Matayabas composition.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang Peng whose telephone number is (571) 272-1091. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

klp
November 19, 2004

Kuo-Liang Peng
Primary Examiner
Art Unit 1712

KUO-LIANG PENG
PRIMARY EXAMINER